



# SLOVENSKI STANDARD SIST EN 4165-002:2009

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Aerospace series - Connectors, electrical, rectangular, modular - Operating temperature  
175 °C continuous - Part 002: Specification of performance and contact arrangements

Luft- und Raumfahrt - Elektrischer Rechtecksteckverbinder in modularer Bauweise -  
Betriebstemperatur 175 °C konstant - Teil 002: Leistungsdaten und Kontaktanordnungen

Série aérospatiale - Connecteurs électriques modulaires - Températures d'utilisation  
175°C continu - Partie 002 : Spécification de performances et arrangement de contacts

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**EN 4165-002**

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**Aerospace series - Connectors, electrical, rectangular, modular -  
Operating temperature 175 °C continuous - Part 002:  
Specification of performance and contact arrangements**

Série aéronautique - Connecteurs électriques modulaires -  
Températures d'utilisation 175 °C continu - Partie 002 :  
Spécification de performances et arrangement de contacts

Luft- und Raumfahrt - Elektrischer Rechtecksteckverbinder  
in modularer Bauweise - Betriebstemperatur 175 °C  
konstant - Teil 002: Leistungsdaten und  
Kontaktanordnungen

This European Standard was approved by CEN on 30 September 2005.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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## Foreword

This document (EN 4165-002:2007) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2007, and conflicting national standards shall be withdrawn at the latest by October 2007.

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**EN 4165-002:2007 (E)****1 Scope**

This standard defines a number of conditions common to rectangular electrical modular connectors for receptacles, plugs and rack and panel, with interchangeable modules and continuous operating temperature 175 °C.

**2 Normative references**

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 2591-209, *Aerospace series – Elements of electrical and optical connection – Test methods – Part 209: Current temperature derating.*

EN 3155-002, *Aerospace series – Electrical contacts used in elements of connection – Part 002: List and utilization of contacts.*<sup>1)</sup>

EN 3197, *Aerospace series – Installation of aircraft electrical and optical interconnection systems.*<sup>1)</sup>

EN 4165-001, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 001: Technical specification.*

EN 4165-003, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 003: Modules series 2 and series 3 – Product standard.*<sup>1)</sup>

EN 4165-004, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 004: Stackable mounting receptacle 2 and 4 modules, series 2 – Product standard.*

EN 4165-005, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 005: Stackable mounting receptacle 2 and 4 modules, series 3 – Product standard.*

EN 4165-006, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 006: Plug for 2 and 4 modules, series 2 – Product standard.*

EN 4165-007, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 007: Plug for 2 and 4 modules, series 3 – Product standard.*

EN 4165-008, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 008: Rack and panel plug for 2 and 4 modules, series 2 – Product standard.*

EN 4165-009, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 009: Rack and panel plug for 2 and 4 modules, series 3 – Product standard.*

EN 4165-010, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 010: Rack and panel rear mounted plug 2 and 4 modules, series 2 – Product standard.*

EN 4165-011, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 011: Flange mounting receptacle 2 and 4 modules, series 2 – Product standard.*

EN 4165-012, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 012: Flange mounting receptacle 2 and 4 modules, series 3 – Product standard.*

EN 4165-013, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 013: Cable clamp 2 and 4 modules for connectors, series 2 and series 3 – Product standard*<sup>1)</sup>

EN 4165-014, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 014: Shielded accessory body, 2 and 4 modules for connectors, series 2 and series 3 – Product standard.*

EN 4165-015, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 015: Round chimney for accessory (1 per module cavity) – Product standard.*

EN 4165-016, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 016: Double oval chimney for accessory (1 per 2 modules) – Product standard.*

EN 4165-017, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 017: Blank chimney for accessory (1 per module cavity) – Product standard.*

EN 4165-018, *Aerospace series – Connectors, electrical, rectangular, modular – Operating temperature 175 °C continuous – Part 018: Protective cover for receptacle 2 and 4 modules, series 2 and series 3 – Product standard.*

EN 4529-002, *Aerospace series – Elements of electrical and optical connection – Sealing plugs – Part 002: Index of products standards.*<sup>1)</sup>

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 4165-001 apply.

### 4 Synoptic

[SIST EN 4165-002:2009  
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For intermountabilities between plugs and receptacles, modules series 2 and series 3, male and female, see informative Annex A.

### 5 Description and codification of shell classes

See Table 1.

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1) Published as AECMA Prestandard at the date of publication of this standard.

Table 1

Classes	Description
<b>Connectors</b>	
<b>W</b>	Plug and receptacle with housing (shell) olive drab cadmium plated, aluminium alloy, conductive finish, 500 h resistance to salt mist, rectangular grounding device, or not, maximum operating temperature: 175 °C continuous.
<b>F</b>	Plug and receptacle with housing (shell) black nickel plated aluminium alloy, 96 h resistance to salt mist, rectangular grounding device, or not, maximum operating temperature: 175 °C continuous.
<b>J</b>	Plug and receptacle with housing (shell) olive drab cadmium plated, composite material, 500 h resistance to salt mist, plug with rectangular grounding device, maximum operating temperature: 175 °C continuous.
<b>M</b>	Plug and receptacle with housing (shell) nickel plated composite material, 500 h resistance to salt mist, plug with rectangular grounding device, maximum operating temperature: 175 °C continuous.
<b>A</b>	Plug and receptacle with housing (shell) black anodised plated aluminium alloy, non-conductive finish, 48 h resistance to salt mist, maximum temperature: 175 °C continuous.
<b>Protective cover</b>	
<b>W</b>	Protective cover for plug and receptacle olive drab cadmium plated, aluminium alloy, 500 h resistance to salt spray, rectangular grounding device, or not, maximum operating temperature: 175 °C continuous.
<b>F</b>	Protective cover for plug and receptacle black nickel plated aluminium alloy, 96 h resistance to salt spray, rectangular grounding device, or not, maximum operating temperature: 175 °C continuous.
<b>Accessories</b>	
<b>W</b>	Cable clamp cover in olive drab cadmium plated, aluminium alloy, 500 h resistance to salt spray, maximum operating temperature: 175 °C continuous.
<b>F</b>	Cable clamp in black nickel plated, aluminium alloy, 96 h resistance to salt spray, maximum operating temperature: 175 °C continuous.
<b>J</b>	Shielded accessory body in olive drab cadmium plated, composite shell, 500 h resistance to salt spray, rectangular grounding device, maximum operating temperature: 175 °C continuous.
<b>M</b>	Shielded accessory body, nickel plated composite shell, 500 h resistance to salt spray, rectangular grounding device, maximum operating temperature: 175 °C continuous.
<b>A</b>	Cable clamp cover in black anodised plated aluminium alloy, non-conductive finish, 48 hours resistance to salt mist, maximum temperature: 175 °C continuous.
<b>Chimney for rear accessories</b>	
<b>W</b>	Blank round, or double oval chimney, olive drab cadmium plated aluminium alloy, 500 h resistance to salt spray, rectangular grounding device, or not, maximum operating temperature: 175 °C continuous.
<b>F</b>	Blank round, or double oval chimney, black nickel plated, aluminium alloy, 96 h resistance to salt spray, rectangular grounding device, maximum operating temperature: 175 °C continuous.



## 6 Operating conditions

### 6.1 Combinations of plugs and receptacles

Table 2 shows the combinations marked by an X which achieve the characteristics specified for each module.

For other combinations, the characteristics of the pair of connectors are those of the components with the lowest performance.

Other combinations may be used subject to the approval of the design authority.

**Table 2**

				EN 4165-011		EN 4165-012		
				Flange mounting receptacle series 2		Flange mounting receptacle series 3		
				Classes F, W and A		Classes J and M		
				2 Modules	4 Modules	4 Modules	2 Modules	
				4 Modules			4 Modules	
EN 4165-006	Plug series 2	Classes F, W and A	2 Modules	X	–	–	–	–
			4 Modules	–	X	X	–	–
		Classes J and M	4 Modules	–	X	X	–	–
EN 4165-008	Rack and panel plug series 2	Classes F, W and A	2 Modules	X	–	–	–	–
			4 Modules	–	X	–	–	–
EN 4165-007	Plug series 3	Classes F, W and A	2 Modules	X	–	–	X	–
			4 Modules	–	X	–	–	X
EN 4165-009	Rack and panel plug series 3	Classes F, W and A	2 Modules	X	–	–	X	–
			4 Modules	–	X	–	–	X
EN 4165-010	Rack and panel rear mounted plug series 2	Classes F, W and A	2 Modules	X	–	–	X	–
			4 Modules	–	X	–	–	X

Plug = female modules only  
Receptacle = male modules only

### 6.2 Combinations of protective covers and connectors

See Table 3.

**Table 3**

Protective cover class	Receptacle class			
	W	F	J	M
W	X	–	X	–
F	–	X	–	X